UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,151	09/25/2006	Yasuaki Inoue	065933-0287	6078

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EXAMINER
YODER III, CHRISS S

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>25 September 2006</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-15</u> is/are pending in the application.
       4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-15</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>25 September 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
       Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
       Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
       a)☒ All   b)☐ Some * c)☐ None of:
       1.☐ Certified copies of the priority documents have been received.
       2.☐ Certified copies of the priority documents have been received in Application No. _____.
       3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
       * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
       Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
       Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1.   **Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by**

Tamai et al. (US Pub. 2002/0154240).

2.   In regard to **claim 1**, note Tamai discloses the use of an image correction

apparatus comprising a lens distortion calculation unit which acquires information on

zoom magnifications contained in data of known images captured at respective different

zoom magnifications (paragraphs 077-0110), and calculates lens distortion correction

information with respect to each zoom magnification (paragraphs 0100-0110), and a

storing unit which stores the lens distortion correction information in association with the

zoom magnifications (paragraphs 0077-0110, figures 8-10).

3.   In regard to **claim 2**, note Tamai discloses the use of an image correction

apparatus comprising a storing unit which contains lens distortion correction

information in association with zoom magnifications of a lens (paragraph 0083, and

figure 8: memory 17), a selection unit which acquires from data of an input captured

image, information on a zoom magnification employed at the time of capturing of the

captured image, and selects lens distortion correction information corresponding to the

zoom magnification from the storing unit (paragraphs 0083-0086), and a distortion

correction unit which corrects distortion of the captured image ascribable to capturing

based on the lens distortion correction information selected (paragraphs 0077-0110,

figures 8-10).

4.   In regard to **claim 3**, note Tamai discloses that the selection unit selects from the

storing unit a plurality of candidate pieces of lens distortion correction information in

accordance with the zoom magnification employed at the time of capturing, and correct

a row of sample points forming a known shape in the captured image by using each of

the plurality of pieces of lens distortion correction information for error pre-evaluation

(paragraph 0077), and thereby selects one piece of lens distortion correction

information from among the plurality of pieces of lens distortion correction information

(paragraphs 0077-0110, figures 8-10).

5.   In regard to **claim 4**, note Tamai discloses the use of an image correction

apparatus comprising a lens distortion calculation unit which acquires information on

zoom magnifications contained in data of known images captured at respective different

zoom magnifications (paragraphs 0100-0110), and calculates a lens distortion

correction function for mapping points in a lens-distorted image onto points in an image

having no lens distortion and a lens distortion function, or an approximate inverse

function of the lens distortion correction function, with respect to each lens magnification

(paragraphs 0100-0110), and a storing unit which stores the pairs of lens distortion

correction functions and lens distortion functions in association with the zoom

magnifications (paragraphs 0077-0110, figures 8-10).

6.   In regard to **claim 5**, note Tamai discloses the use of an image correction

apparatus comprising a storing unit which contains pairs of lens distortion correction

functions for mapping points in a lens-distorted image onto points in an image having no

lens distortion and lens distortion functions, that are approximate inverse functions of

the lens distortion correction functions, in association with respective zoom

magnifications of a lens (paragraph 0083, and figure 8: memory 17), a selection unit

which acquires from data of an input captured image, information on a zoom

magnification employed at the time of capturing of the captured image, and selects from

the storing unit the lens distortion function corresponding to the zoom magnification

(paragraphs 0083-0086), and a distortion correction unit which corrects distortion of the

captured image ascribable to capturing based on the lens distortion function selected

(paragraphs 0077-0110, figures 8-10).

7.   In regard to **claim 6**, note Tamai discloses the selector unit selects from the

memory unit a plurality of candidate lens distortion correction functions in accordance

with the zoom magnification employed at the time of capturing, and corrects a sequence

of sample points forming a known shape in the captured image by using each of the

plurality of lens distortion correction functions for error pre-evaluation (paragraph 0077),

and thereby selects one of the plurality of lens distortion functions (paragraphs 0077-

0110, figures 8-10).

8.   In regard to **claim 7**, note Tamai discloses an image correction apparatus

comprising a storing unit which contains lens distortion functions for mapping points in

an image having no lens distortion onto points in a lens-distorted image in association

with respective zoom magnifications of a lens (paragraph 0083, and figure 8: memory

17), a selection unit which acquires from data of an input captured image, information

on a zoom magnification employed at the time of capturing of the captured image, and

selects the lens distortion function corresponding to the zoom magnification from the

storing unit (paragraphs 0083-0086), a perspective distortion calculation unit which

calculates a perspective distortion function for mapping points in an image having no

perspective distortion onto points on a perspective-distorted image, by using an image

whose lens distortion is corrected by the lens distortion function selected (paragraph

0077), and a distortion correction unit which corrects distortion of the captured image

ascribable to capturing based on the perspective distortion function calculated by the

perspective distortion calculation unit (paragraphs 0077-0110, figures 8-10).

9.   In regard to **claim 8**, note Tamai discloses the selector unit selects from the

memory unit a plurality of candidate lens distortion correction functions in accordance

with the zoom magnification employed at the time of capturing (paragraph 0083, and

figure 8: memory 17), and corrects a sequence of sample points forming a known shape

in the captured image by using each of the plurality of lens distortion correction

functions for error pre-evaluation, and thereby selects one of the plurality of lens

distortion functions (paragraphs 0077-0110, figures 8-10).

10.   In regard to **claim 9**, note Tamai discloses the use of an image correction

database creating method comprising acquiring information on zoom magnifications

contained in data of known images captured at the respective different zoom

magnifications, and calculating a lens distortion correction function for mapping points

on a lens-distorted image onto points on an image having no lens distortion and a lens

distortion function, or an approximate inverse function of the lens distortion correction

function, with respect to each lens magnification; and registering the pairs of lens

distortion correction functions and lens distortion functions into a database in

association with the zoom magnifications (paragraphs 0077-0110, figures 8-10).

11.   In regard to **claim 10**, note Tamai discloses an image correction method

comprising: consulting a database in which pairs of lens distortion correction functions

for mapping points in a lens-distorted image onto points in an image having no lens

distortion and lens distortion functions, that are approximate inverse functions of the

lens distortion correction functions, are registered in association with respective zoom

magnifications of a lens (paragraph 0100-0110), acquiring from data of an input

captured image, information on a zoom magnification employed at the time of capturing

of the captured image, and selecting the lens distortion function corresponding to the

zoom magnification; and correcting distortion of the captured image ascribable to

capturing based on the lens distortion function selected (paragraphs 0077-0110, figures

8-10).

12.   In regard to **claim 11**, note Tamai discloses that the correcting of the distortion

includes mapping a point in a target image having no distortion ascribable to capturing

onto a point in a lens-distorted captured image by using the lens distortion function

selected which was selected from the image correction database (paragraph 0077), and

determining a pixel value at the point in the target image by interpolating pixel values

near the mapped point in the captured image (paragraphs 0077-0110, figures 8-10).

13.   In regard to **claim 12**, note Tamai discloses that selecting of the lens distortion

function includes: selecting a plurality of lens distortion correction functions as

candidates in accordance with the zoom magnification employed at the time of

capturing (paragraphs 0077) correcting a row of sample points having a known shape in

the captured image by each of the plurality of lens distortion correction functions for

error pre-evaluation; and selecting one from among the plurality of lens distortion

functions (paragraphs 0077-0110, figures 8-10).

14.   In regard to **claim 13**, note Tamai discloses the use of an image correction

method comprising consulting a database in which lens distortion functions for mapping

points in an image having no lens distortion onto points in a lens-distorted image are

registered in association with respective zoom magnifications of a lens (paragraph

0077), and acquiring from data of an input captured image, a zoom magnification

employed at the time of capturing of the captured image and selecting the lens

distortion function corresponding to the zoom magnification (paragraph 0088-0093),

calculating a perspective distortion function for mapping points in an image having no

perspective distortion onto points in a perspective-distorted image, by using an image

whose lens distortion is corrected by the lens distortion function selected; and correcting

distortion of the captured image ascribable to capturing based on the perspective

distortion function calculated (paragraphs 0077-0110, figures 8-10).

15.   In regard to **claim 14**, note Tamai discloses the correcting of the distortion

includes mapping a point in a target image having no distortion ascribable to capturing

onto a point in a perspective-distorted captured image by using the perspective

distortion function calculated (paragraph 0083-0087), and determining a pixel value at the point in the target image by interpolating pixel values near the mapped point in the captured image (paragraph 0088-0093).

16.   In regard to **claim 15**, note Tamai discloses that the selecting of the lens distortion function includes selecting a plurality of lens distortion correction functions as candidates in accordance with the zoom magnification employed at the time of capturing (paragraph 0083-0087), correcting a row of sample points having a known shape in the captured image by each of the plurality of lens distortion correction functions for error pre-evaluation (paragraph 0088-0093), and thereby selecting one from among the plurality of lens distortion functions (paragraphs 0077-0110, figures 8-10).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISS S. YODER III whose telephone number is (571)272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. S. Y./
Examiner, Art Unit 2622

/Lin Ye/
Supervisory Patent Examiner, Art Unit 2622